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ABSTRACT

This technical report presents recommendations and plans which are the result of a mission undertaken as part of a project to promote a scientific and technological information service and establish a popular science resource center in Korea. The mission's main emphasis was to help Korean authorities and the United Nations Development Programme (UNDP) to further their plans for the automation of the proposed Comprehensive Science Library (CSL) in the "science city" of Daeduk, which is a complex of research institutes mainly funded by the Republic of Korea. Background information and automation plans for the CSL are presented and the remaining issues and problems are identified. These issues encompass project management; identifying a suitable automation system; locating a system that can handle records written in Chinese, Japanese, and Korean characters; time factors; planning; funding; systems uniformity across the science complex; and employee training. Concluding the report are a summary of the recommendations, definitions of abbreviations used, and the mission's timetable. (MAB)

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REPUBLIC OF KOREA

Promotion of Scientific and Technological Information Service

Automation of the Comprehensive Science Library

by A. Graham Mackenzie

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Serial No. FMR/IPS/OPS/90/204(UNDP)

United Nations Educational, Scientific and Cultural Organization

United Nations Development Programme

Paris, 1990

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REPUBLIC OF KOREA

Promotion of Scientific and Technological Information Service

AUTOMATION OF THE COMPREHENSIVE SCIENCE LIBRARY

by A. Graham Mackenzie

Report prepared for the Government of the Republic of Korea by the United Nations Educational, Scientific and Cultural Organization (Unesco) acting as Executing Agency for the United Nations Development Programme (UNDP)

United Nations Educational, Scientific and Cultural Organization

United Nations Development Programme

UNDP/ROK/87/010
Technical Report (Mackenzie)
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16 March 1990

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Summary

This mission was undertaken within the framework of the Project ROK/87/010 Promotion of Scientific and Technological Information Service and Establishment of the Popular Science Resource Centre to help the Korean authorities and UNDP to bring nearer to fruition their plans for the automation of the proposed Comprehensive Science Library in the "Science City" of Daeduk, a complex of research institutes mainly funded by the Government of the Republic of Korea.

It followed a similar mission by another consultant in November 1988; the latter, however, had a much more extended remit, since he was concerned with the overall planning of the Comprehensive Science Library, rather than merely the automation aspect. It came to light that the timetable recommended by the previous consultant had not been observed: the main reason seemed to be that the necessary financial support had not yet been added to the budget of the institutions involved, so that the planning and implementation of the new system had fallen behind because of lack of the necesssary resources both of manpower and of capital expenditure.

Certain recommendations are made which, if accepted at an early date, may have some chance of minimizing future delays in implementing the system; there is no disagreement in any quarter about what type of system should be installed, although no completely suitable supplier has yet been identified.

Technical Report

I. INTRODUCTION

1. The Consultant was engaged by Unesco from 6 November to 2 December 1989. The terms of reference of his mission were to proceed to Seoul, Republic of Korea, and in close cooperation with the national authorities, undertake the following duties:

(i) participate in the Library Automation Workshop, to be organized within the framework of Project ROK/87/010, as a resource person.

(ii) prepare recommendations concerning the automation plan of the National Comprehensive Science Library.

II. THE COMPREHENSIVE SCIENCE LIBRARY

2. In this report frequent reference will be made to

Republic of Korea: Scientific and technological information service: Technical Report UNDP/ROK/87/010, by Stuart J. Ede, serial no FMR/IPS/OPS/89/205(UNDP), published in Paris by Unesco in 1989.

These references will be in the form "Ede,xxx)", where xxx is a paragraph number in that Report.

Background

3. Mr. Stuart J. Ede, of the British Library, was engaged by Unesco as a consultant to advise on the planning of a major expansion of the KAIST (Korea Advanced Institute of Science and Technology) Library, so that it may serve as a Comprehensive Science Library for the "Science Complex", a group of over 20 Research Institutes located mainly at Daeduk ("Science City"), a green-field site outside the provincial capital Taejeon, some 160km south of Seoul. Many of the Institutes are already there; KAIST itself is due to relocate there over a period of 18 months from Spring 1990, and its new library building is nearly completed. Other Institutes will move as the opportunity offers; but the Science Complex is an organizational rather than a physical entity, and some of its component Institutes are expected to remain in Seoul for the foreseeable future. It is therefore important that the CSL (Comprehensive Science Library) is generally perceived not

only as a site library of last resort for Daeduk, but as the centre of a logical and communications network capable of serving, initially, all the constituent parts of the Science Complex, whatever their geographical location; it is also designed to expand its service to other segments of the Korean research community at a later date, as circumstances change and the logical and communications networks develop.

4. For this reason it is suggested that the term "Comprehensive Science Library" might be modified to "Central Science Library", which offers a more accurate description of its function: there can be no such thing as a "comprehensive" library, in any subject; and the operational specification defines the future holdings of CSL as being capable of meeting no more than 60 - 70% of the national need for scientific literature.

5. Mr. Ede made a comprehensive series of recommendations for the planning and staffing of the CSL; these are outwith the terms of reference of this Consultant, and are only mentioned here as background. It is understood, however, that the KAIST authorities have adopted all these recommendations in principle, although their implementation has been delayed by lack of appropriate funding.

Plan for automation

6. Similarly, Mr. Ede's recommendations for the automation of the CSL have been adopted as a whole. It is, however, disappointing to learn that in the 12 months which have elapsed since his visit took place, and the draft of his report was received in Korea, little real progress has been made. The timetable for implementing an automated system (Ede, Annex 2) was very tight in the first instance, calling as it did for the record content and format, as well as the operational requirement of the system, to be completely specified by July 1989, a contract to be placed by November, and the first phases of a very complex structure to be in place and operational by January 1990.

7. As far as this Consultant was able to learn, only five steps (at most, from a total of 24 in the timetable) have been completed: a study tour has taken place, and the first Workshop has been held; some discussions have also taken place with one (only) of the potential system suppliers, OCLC (Online Computer Library Centre, Inc.) (Ede, 116-129, 101-102); and it is understood that the Operational Requirement is virtually complete and that the record format has been specified. The reason for this slippage is clear: although the Planning Committee undertook the recommended Study Tour, and has carried out some theoretical studies, it has not been able to proceed to the next, crucial, step of appointing a full-time Systems Team with responsibility for carrying the project forward (Ede,88). Without such a group, who must be relieved of all other work not connected with the automation project, there is no prospect of implementing any major automated system, let alone one as complex as that of the CSL, within any foreseeable future: it is not an answer that the intention is to buy-in an "Integrated

Library System" (ILS), because such a system, even if it were to be bought straight "off-the-peg" without any modifications, would require much more effort from the purchasing library than can be given by members of staff who have other day-to-day duties.

8. It is therefore strongly recommended that immediate steps are taken to create a Systems Team, by one or more of the following methods:

- freeing senior and appropriately experienced members of the KAIST Library staff from all other duties
- seconding suitably qualified members of other Science Complex library staff from all other duties for the duration of the project
- appointing or seconding suitable staff from outside the Science Complex libraries for the duration of the project.

9. One of these people - preferably an experienced librarian - should be given the oeprational control of the Systems Team, under the overall supervision of the Director of KAIST Library, who (it appears) has formal responsibility for controlling the whole CSL project; the Planning Committee should continue to advise the Team. At least one member of the Systems Team must be a computer professional: some of the potential librarian members have a fair degree of knowledge of computer systems, but this can be no substitute for the detailed familiarity with hardware and software which this project requires at the local level.

10. The Consultant cannot stress strongly enough that he is convinced that the project, as presently conceived, cannot possibly succeed unless action of this kind is taken. It has been suggested (Ede, 88) that a full-time team of 5 people is required: the Consultant has no indication that this figure is too large.

III. PROBLEMS REMAINING

Project management

11. The difficulty of staffing the project at an adequate level has already been mentioned; however staffing alone is not enough - suitable management structures and levels must also be in place. At present the Consultant understands that the overall responsibility for the CSL project lies with the KAIST Library, and that in practice the automation segment of this (at least) is delegated to the KAIST Librarian, Mr. Choi Ho Nam; he in turn is guided in part by a Planning Committee consisting of himself, Mr. Park Ke Hong (of KIST), Mr. Kim Chang Keun, Librarian of KIT, Mr. Jung Duk Yung and Mr. Lee Sang Hun, of the Technical Information Centre. These are all very busy men; it is understood that the Planning Committee meets only at intervals, and that Mr. Choi has so many other tasks within KAIST Library that he cannot at present

devote enough time to the project to get it moving rapidly. It is imperative that the Planning Committee (including Mr. Choi) are allowed free time for the automation project: at least two days each week are required until the Systems Team is in post; thereafter one day each week might suffice.

Type of system required

12. The project calls for a system which, in the long term, will

- act as an ILS for the CSL itself
- act as a networked ILS for a few of the smaller institutes which cannot justify the installation of their own independent system
- provide an online union catalogue for the scientific material held in the research institutes of Korea
- act as a medium for a national and international inter-library loan system, through networking
- be sufficiently expansible to allow other types of libraries to link in, wholly or partially (e.g. the scientific activities of university libraries might benefit from some form of liaison).

13. This is an ambitious programme: it can only be approached in stages, and the highest priority must be to get the first step right, to install the ILS for the CSL and establish the union catalogue. Figure 1, overleaf, shows in diagrammatic form how this Consultant sees the immediate first stage of implementation; Figure 2 shows one possible view of the final system, though this must lie several years in the future, and changes in the technology available at that time may well require the pattern to be drastically altered.

Time-scale and planning

14. It is clear that the time-scale envisaged by Ede has already slipped by at least 12 months; and that, unless suitable remedial action is taken immediately, the system will not be in place by the time in 1991 when the whole KAIST Library is relocated to Daeduk (see paras. 6-11). It is also understood that Government does not intend at present to take a firm decision on funding the next major phase of the project, the capital expenditure for the first (central) ILS, before June 1990. As a consequence, other preparatory actions, even some which do not require fresh allocation of funds (e.g. the retroconversion of records), are being held in abeyance until these financial decisions have been taken.

15. The consequences of these delays are likely to be serious: the Ede timetable laid down a large number of actions which are

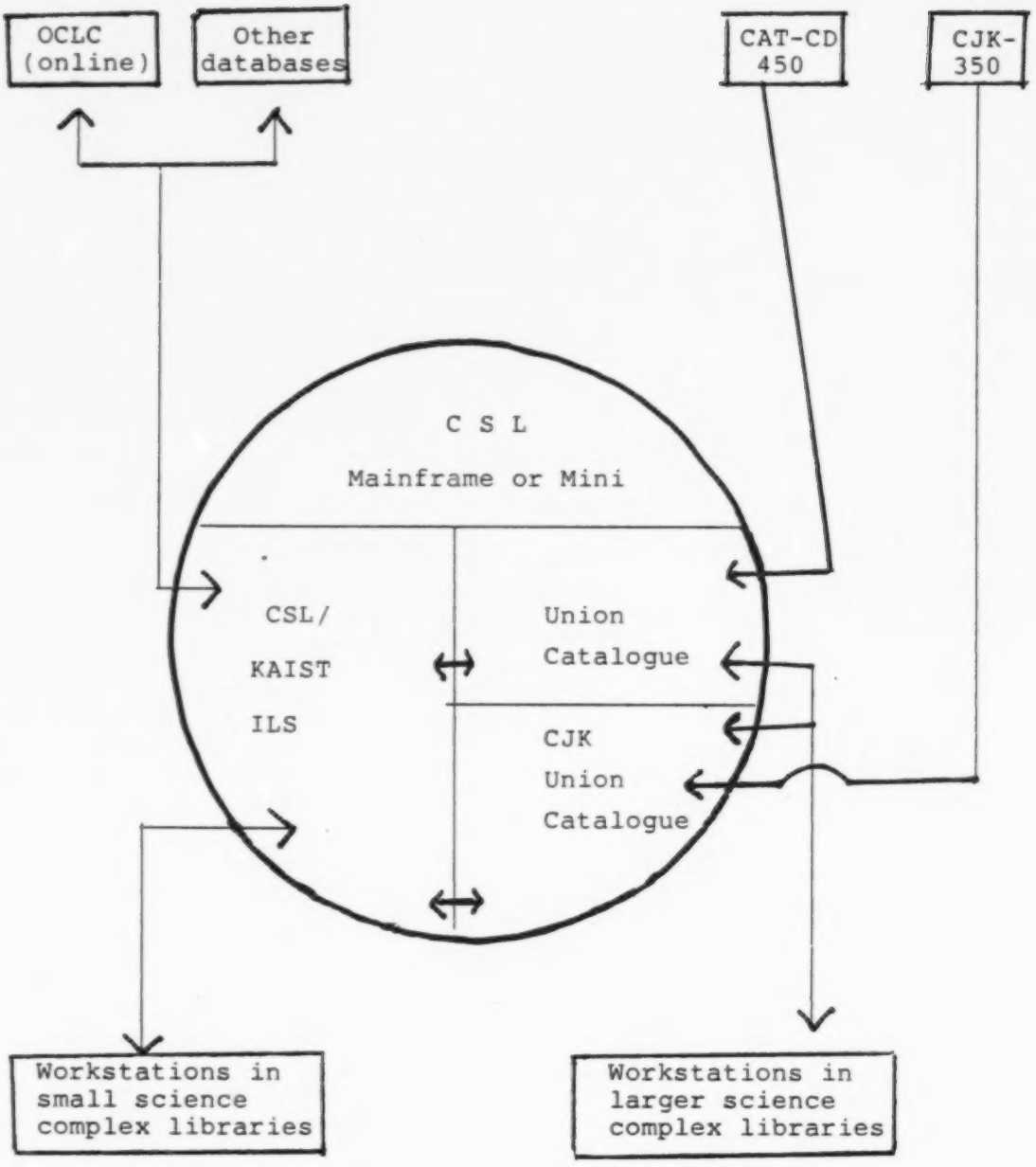

Figure 1: Initial state of the system

Phase 1A, 1991 (?): Roman script material only, except for the (separate) CJK Union Catalogue. The system comprises CSL and 17 workstations, some in external libraries

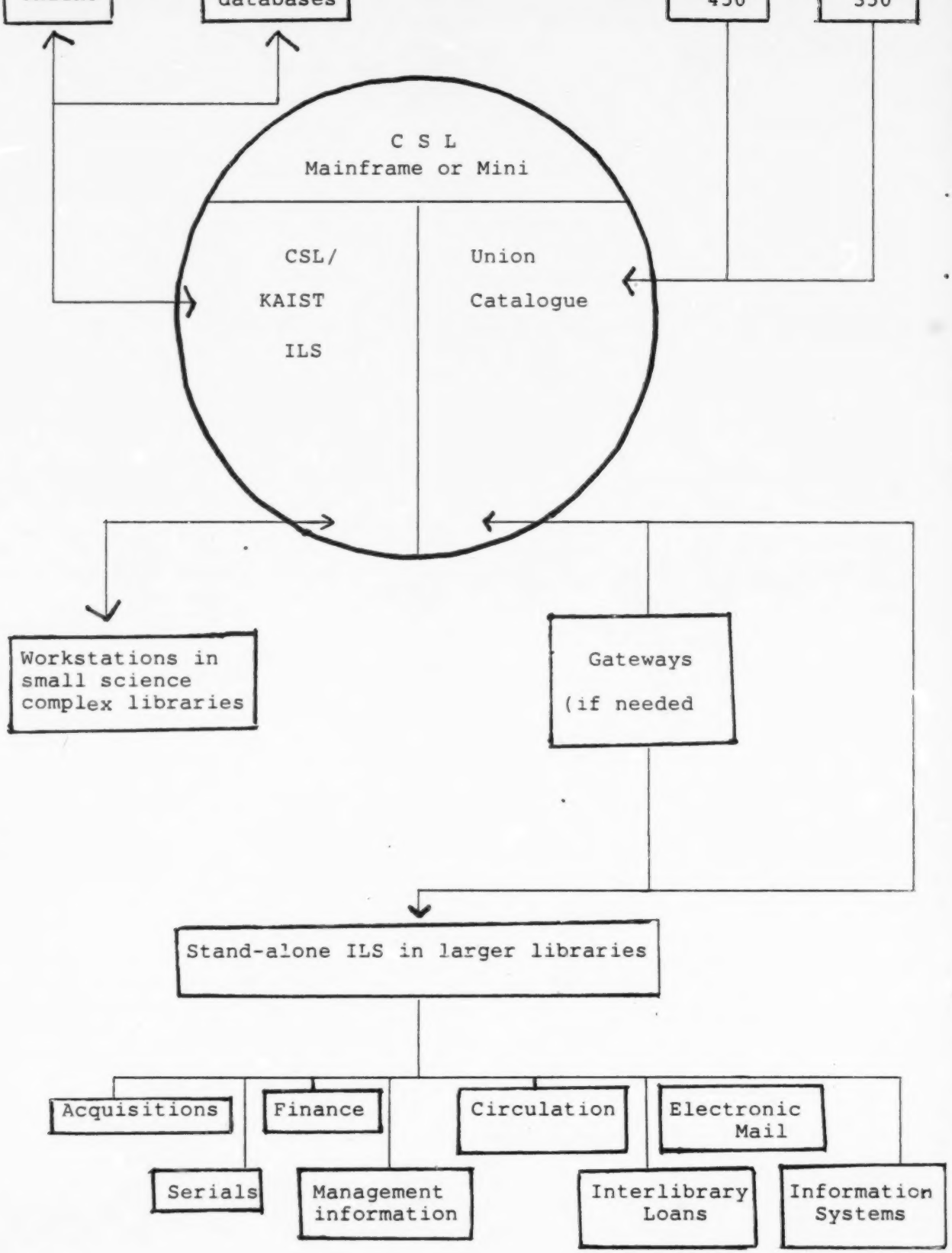

Figure 2: A possible final version of the total system

essential even before an order is placed for the ILS; not all of these involve major expenditure in cash terms, but they do involve effort. Unless this effort is input now, in advance of capital expenditure, it seems unlikely that at least a further year will be lost - these preparations must be made in advance, and they cannot be hurried.

16. In addition to the actions already recommended for strengthening the Planning Committee and creating a Systems Team (paras. 6-11). It is now important to decide, and act on, the highest priorities within the overall programme, so that the Team's immediate course for action is clear. These are, in the opinion of the Consultant:

- begin retroconversion, both of CJK and Western-language material

- reconsider, in the light of the present delays, the priorities for phased implementation which are already agreed (Ede,100)

- complete the Operational Requirement, and specify the criteria for system selection (Ede, 91).

These are the tasks which lie closest to the critical path for the project, and until they are complete there is little prospect of any major progress in any direction.

Chinese/Japanese/Korean character set

17. One problem facing Korean libraries wishing to adopt computer methods, which does not affect libraries in Western countries to the same extent, is that a significant proportion of their holdings is in Chinese, Japanese or Korean script. It is therefore desirable that any system adopted should have the capability of handling such "CJK" records, as well as those in Roman script: this automatically limits the choice of system (Ede, 106). At present two possible suppliers of the proposed ILS appear to have this capability, at least potentially (and there may be others, such as the suppliers of the Dynix system, who would be willing to develop it): OCLC have developed a system called CJK-350, a self-contained system for cataloguing and retrieval only, and their database has a large number of CJK holdings recorded; while CLSI, another major supplier from the United States, also has a CJK capability. Unfortunately neither supplier is at present in a position to handle CJK records within their ILS packages - OCLC's LS/2000 and CLSI's Libs 100 systems are both limited to Western scripts.

18. In these circumstances two courses of action seem to be open: either wait until one or more suppliers have developed a CJK capability within an ILS, or decide to proceed with a system which at least seems likely to develop such a capability in the foreseeable future. The latter option seems more promising, given that only 17% of the present holdings of the Science Complex libraries would require CJK treatment: modern scientific and technical literature is mainly written in English, with other European languages together as the second most common medium. Complete retrospective conversion of all the records to machine-readable form will take several years: by postponing the handling of CJK material until the end of this process there is every prospect that the problem will have been solved by then.

19. The Consultant therefore recommends that:

- the choice of a supplier for the ILS should not be critically dependent on a present capability for handling CJK material

- nevertheless all potential suppliers should be asked whether they would be prepared to consider developing such a capability, perhaps with some additional financial support from CSL or other sources

- irrespective of the results of these enquiries, an immediate start should be made on building up a CJK database, using the CJK-350 package which has already been acquired for use in the project.

Financial provision

20. The acquisition of a turnkey ILS even for CLS alone, leaving aside the other libraries in the Science Complex, would be an expensive commitment: not only is there the cost of the system itself - perhaps $500,000 (Ede, 40), although more recently a figure some 20% lower has been mentioned - but the extra cost of the staff needed for planning and implementation, as well as the day-to-day operation of the system, must be taken account of. It seems likely, on general principles, that the operational costs will at least be balanced, if not exceeded, by savings made elsewhere, and that a better level of service will also result; however it is not likely that the initial setting-up costs will be recovered directly and in the short term. Moreover there is a need for additional temporary staff to carry out the work of retrospective conversion of records to machine-readable form: it is understood that budgetary provision for this has already been made to the extent of $150,000, but work should commence as soon as possible. This retroconversion will be facilitated not only by the CJK-350 system which has been acquired with financial help from UNDP, but by the CAT-CD 450 system created by OCLC to give easy local access to a very large database of commonly-used records for cataloguing purposes, which was also acquired from the same source.

21. On the other hand, it is believed that there is a firm commitment in principle to the project at Government level: if the end is to be achieved, then this must be matched by a clear financial commitment in the next budget period. Little progress can be made until this is agreed, since there is an urgent need to devote very much more staff effort to the project than is currently possible: this will inevitably cost money, which cannot be freed within the existing budget, either to release existing staff from their present duties or to engage additional staff.

22. The Consultant therefore recommends that the Planning Committee should calculate, as a matter of urgency, what additional funding is required for staffing the project on the basis indicated above (see paras. 6-11); and that this funding, together with the capital cost of the ILS, should be sought within the financial year 1990 so that some immediate progress may be made.

23. Consideration was also given to the computing infrastructure which this project will need: an electronic network must be available which is not only easy and cheap to use, but also robust and reliable. Discussions with the Manager of the National Research Computer Network Planning and R & D Group established that he was aware of the needs of the CSL project; there was no evidence that there would be any difficulty - whether financially or organizationally - in meeting these needs. Nevertheless it is important that the Planning Committee and the Systems Team keep open this channel of communication with the network operators and planners.

Choice of system

24. Reference has already been made to the specific problem in Korean libraries of catering for CJK material (see paras. 17-19). There is however a further difficulty, additional to those which every library meets when trying to select an ILS: this is that such a complex system requires a significant quantity of close support from the supplier. At the very least, there has to be an expert on the specific system software available to visit any of the operational sites at short notice; and if there is no first-line support locally from the manufacturers of the hardware in use, then the system supplier must also be prepared to remedy any faults or difficulties which arise there. At present neither of the major manufacturers of turnkey systems with whom this problem has been discussed (OCLC and CLSI) is willing to install its ILS within Korea, simply because neither believes that the cost to it of setting up the essential local support team could be justified in commercial terms. OCLC, however, has indicated that a customer base of about 10 libraries might be large enough to persuade it to make this investment; CLSI has replied negatively, but the form in which the question was put to it did not make clear the potential size of the customer base. The question should be raised again with this firm, and from any others which might possibly meet the other criteria for choosing suppliers.

25. It is recommended that the CLS Planning Committee obtain a declaration of intent from as many as possible of the Science Complex libraries that they will adopt whatever ILS is chosen for CLS; and that, armed with this information, potential suppliers are asked as a matter of urgency to consider whether a probable Korean market of (say) 5 installations immediately, and a further 5 within two years, would form a sufficiently large commercial base for the importation and support of their systems. When such potential suppliers have been identified - and they need not be restricted to the two named above - they should be invited to make an extended presentation to the Planning Committee and the System Team; this might take the form of a 2 - 3 day workshop with practical demonstrations and hands-on experience. An external "expert" should also be invited to attend and help with the evaluation of the competing systems: Funds should be sought to finance such a visit, say for five days.

Uniformity of systems across the Science Complex

26. Because of the logistic problems for manufacturers of supporting an ILS there is a presumption that most of the constituent libraries of the Science Complex will adopt the same ILS as the one which is chosen by CLS. This is, however, not an absolute rule: at present there are a few of these libraries which already have partial systems operational, and it would not be reasonable to scrap these if they are performing satisfactorily. It may also be sensible for some of the medium-sized libraries to consider adopting a smaller, and therefore less expensive, ILS - perhaps based on PCs rather than on a minicomputer. In both these cases, a gateway must be provided for these libraries to access (at least) the Union Catalogue. It is understood that the R & D computer network has been allocated funds to resolve this type of difficulty; as soon as the decision has been taken on the CLS facilities it should begin work on linking in at least these libraries which already have systems (e.g. KIT and ETRI).

Training

27. Both from experience elsewhere and from the evidence available locally, it seems that there is a need for specific training of personnel for automation at three distinct levels:

- in the design and management of systems
- in the operation of systems at the professional level
- in clerical operation of the system (e.g. keyboarding)

28. There are at least four distinct methods of implementing this training:

- visiting and inspecting other installations or utilities

- attachments or internships for periods of time

- workshops, with hands-on experience for a limited period

- "sitting beside Nellie" - being trained on the job by watching and copying someone at the same level who has already learned it.

29. All these methods are appropriate in certain circumstances: the professional design and management of systems are best learned from attachments or internships to other operational establishments, and it is recommended that those of the Systems Team who have not yet had an opportunity to make such visits are sent to major installations abroad (since there are none of a suitable nature within Korea): the Planning Team, who have already made such visits, should be able to recommend suitable places.

30. Other professional staff, who will be expected to operate the system at the day-to-day level, probably do not need intensive training of this type: they should attend specific workshops organized by the Systems Team as soon as parts of the ILS are available, and in the meantime they must be encouraged to become thoroughly familiar with the CAT-CD 450 and the CJK-350 systems, which should very shortly be fully operational; this tactic has a twofold purpose - to familiarize staff with these systems in their own right, but also to make them comfortable with computer systems generally, and dispel the fear which is always present when a major change takes place in working practices.

31. Clerical staff may be trained much more easily on the job: if a small nucleus become expert in suitable keyboarding and operational skills then the remainder will learn - if they are given the opportunity - by the cascade effect.

32. These training efforts must not be left until the full system has come on stream: much better results will be achieved by a comparatively gradual process, establishing each level of skill firmly and building on it, until the whole work-force is both competent and confident that it is capable of operating the system successfully. It is therefore recommended that a training programme be established at all levels of staffing as soon as the Systems Team is in post.

IV. SUMMARY OF RECOMMENDATIONS

(Paras. 3-5):

33. The term "Comprehensive Science Library" should be modified to "Central Science Library", which offers a more accurate description of its function.

(Paras. 6-10):

34. Immediate steps must be taken to create a systems team of about five people, by one or more of the methods described in the text.

35. One member of this team should be given the operational control of the project, under the overall supervision of the Director of KAIST Library, and with advice from the Planning Committee.

36. One member of the systems team must be a computer professional.

(Para. 11):

37. It is imperative that the Planning Committee and Mr. Choi are given free time to devote to the automation project: at least two days each week are required until the systems team are in post; thereafter one day each week might suffice.

(Paras. 12 - 16):

38. It is now imperative to decide on priorities within the overall programme, so that the actions required from the Planning Committee and the Systems Team are clear. These are:

- begin retroconversion, both of CJK and Western-language material
- reconsider, in the light of the delay, the priorities for implementation already agreed (Ede,100)
- complete the Operational Requirement, and specify the criteria for system selection (Ede, 91): these are the tasks which lie closest to the critical path for the project, and until they are complete there is little prospect of any major progress.

(Paras. 17-19):

39. The choice of a supplier for the ILS should not be critically dependent on a present capability for handling CJK material; nevertheless all potential suppliers should be asked whether they would be prepared to consider developing such a capability, perhaps with some additional financial support from CSL or other sources.

40. Irrespective of the results of these enquiries, an immediate start should be made on building up a CJK database, using the CJK-350 package which has already been acquired for use in the project.

(Paras. 20-23):

41. The Planning Committee should calculate, as a matter of urgency, what additional funding is required for staffing the project (see paras. 6-11); this funding, together with the capital cost of the ILS, should be sought within the financial year 1990 so that some progress may be made.

(Paras. 24-25):

42. The CLS Planning Committee should obtain a declaration of intent from as many as possible of the Science Complex libraries that they will adopt whatever ILS is chosen for CLS; armed with this information, potential suppliers should be asked as a matter of urgency to consider whether a probable Korean market of (say) 10 installations over 2 years would form a sufficiently large commercial base for the importation and support of their systems.

43. Potential suppliers should then be invited to make an extended presentation to the Planning Committee and the System Team; this might take the form of a 2 - 3 day workshop with practical demonstrations and hands-on experience. An external "expert" should be invited to attend and help with the evaluation of the competing systems: Funds should be sought to finance this visit.

(Para. 26):

44. Those Science Complex libraries which do not wish to adopt the system chosen for the CLS should investigate other solutions - whether different or smaller turnkey systems, or their own home-grown solution if this already is operational. Those libraries which do not adopt the CLS should have a gateway into the CLS machine constructed by the R & D Network team.

(Paras. 27-32):

45. A training programme should be established for staff at all levels as soon as the Systems Team is in post.

Annex I

Abbreviations used

CAT-CD 450	A cataloguing and retrieval system for bibliographic records, using a database published on CD-ROM by OCLC
CD-ROM	Compact Disc, Read-Only Memory: a system of compressing a great amount of data onto a single disc, as a form of publishing. The retrieval software included on each disc is very rapid and powerful
CJK	"Chinese/Japanese/Korean": applied to material in the scripts/alphabets of these languages. Presents special difficulties in creating and handling bibliographic records
CJK-350	A system developed by OCLC for handling CJK records. It is not compatible with their ILS
CLS	Comprehensive (or "Central") Library System: the proposed new back-up service to be provided for the benefit of all the Science Complex institutions by KAIST Library
CLSI	Computer Library Services Incorporated: a supplier of integrated library systems based in USA
ILS	Integrated Library System: a series of interlinked computer programs, usually from a single supplier (cf "turnkey system"), which is capable of performing all the functions of a library in an efficient manner
KAIST	Korea Advanced Institute of Science and Technology; its Library is to form the basis of CLS at Daeduk
KIST	Korea Institute of Science and Technology: the undergraduate arm of KAIST, which is expected to remain in Seoul
KIT	Korea Institute of Technology (at Daeduk)
OCLC	Online Computer Library Centre, Inc.: a bibliographic utility with a database of over 20 million items, based in Columbus, Ohio, but accessible online from anywhere in the world. OCLC also supplies an ILS (LS/2000) which in many ways meets the specification for the CLS
UNDP	United Nations Development Programme

Annex 2

Timetable of mission

The Consultant spent the period 6-12 November in the U.K., preparing his contribution to the Seminar and Workshop; he flew to Korea on 13-14 November, meeting Mr. S. Matsumoto of Unesco en route, and receiving briefings from him and (on arrival) from Mr. Choi Ho Nam, of KAIST (Korea Advanced Institute of Science & Technology).

15 November was occupied by a meeting with Mr. Park Pyong-Chol, the Programme Officer within UNDP, and by travel to Taejon/Daeduk, the location for the Seminar and Workshop, in the company of Mr. Park Ke Hong (of KIST (Korea Institute of Science & Technology)) and others.

The International Seminar on Library Automation System was held within KIT (Korea Institute of Technology) on 16-17 November; the contributed papers were distributed as a volume of pre-prints to all participants on the first day. It is the impression of the Consultant that the Seminar was a success: there were over seventy people present from the Science Complex library community, and all the overheard comments stressed the fact that the participants had significantly increased their knowledge of the subject-matter. It was particularly important, in the light of the plans for automating the CSL (Comprehensive Science Library), that there were present two representatives of OCLC (Online Computer Library Centre, Inc.) - Mr. Andrew H. Wang, the Director for Asian/Pacific Services, and Mr. Pak Moo-Jae, the CJK User Services Specialist. The Consultant was able to have extended discussions with both of these, and to learn more about the problems associated with the CSL project and about some possible solutions.

18-19 November were free days; on 20-21 November the Workshop took place, under the guidance of Mr. Park Moo-Jae, with about 25 members of the Science Complex library community. Since the proceedings were to be conducted entirely in the Korean language, the Consultant took the opportunity to have further discussions with Mr. Matsumoto and Mr. Park Ke Hong about the second phase of his mission, concerned with the plan for the automation of the CSL. The return to Seoul took place on 21 November, giving an opportunity for further discussion with Mr. Park Ke Hong.

22-24 November were spent at KIST and KAIST: among the futher contacts were Professor Kim (Director of the KAIST Library), Professor Sang (President of KAIST), Mr. Choi (Librarian of KAIST), Dr. Byeon Ok-Hwan (Manager of the National Research Computer Network Planning and R & D Group), and Mr. Tom White, the British Council Representative and U.K. Cultural Attache. During this priod certain provisional recommendations were discussed in detail with Mr. Park Ke Hong.

25-26 November were free of formal visits or meetings, but gave an opportunity to draft further sections of the Consultant's report, and discuss them again with Mr. Park and Mr. Choi at two final sessions on Monday, 27 November. On 28 November a final debriefing session was held with Mr. Choi and Mr. Park Pyong-Chol at UNDP; the Consultant then left for Tokyo, where he attended the Unesco-sponsored Seminar on CD-ROM at the invitation of Mr. S. Matsumoto. The Consultant flew back to the U.K. on 2 December.